branch directing itself in a great measure to the skin of the muzzle and to the internal parts of the eye, the second to the maxillary angle, and the third partly to the skin of the head and partly to the inside of the mouth. The eighth pair or the acoustic, rising immediately from the brain, and in contact with the calcareous granules, enters into the auditory cavity; and the ninth or the pneumo-gastric, having a common origin with the fifth, at first enlarges into a ganglion, then resolves itself into three branches; the outer directed to the skin, the inner to the heart and the aorta, and the median further parts into two branches, one for the stomach and the other for the lungs.

2. *Circulating System.*

A. *Arterial System.*—From the conical ventricle of the heart, placed above a single (? double) auricle, rises the *bulb of the aorta*, which sends out three great trunks from both sides: the upper of which may take the name of *carotid*, since it entirely distributes itself in the head, and at first sends a superficial branch into the interior of the mouth, then another which soon divides into two; the internal, which supplies a branch to the eye and enters the cranium, passing over the brain and anastomosing with the opposite branch; and the external, wholly directed to the ear. The last most conspicuous branch is the maxillary, which supplies also a small branch to the muscles of the neck. The third or lower trunk, having anastomosed, by means of a transverse branch, with the median, is directed entirely to the lungs, where it forms a very delicate network joined by its extremities with the ramifications of the pulmonary vein. The median trunk is that which makes a curve and then descends to form the aorta; but before it bends, a little after its quitting the bulb, it sends out a branch which turns directly towards the nasal fossæ, supplying besides a ramuscule to the eyeball. The aorta, which runs through the whole body to the extremity of the tail, furnishes from its commencement in opposite directions the subclavian arteries, which branch off in their turn into the brachial, ulnar and radial, terminating in the four digitals for the upper limbs, before they enter which they furnish a large branch (*arteria mammaria*) anastomosing with the ischiatic arteries, and from which separate so many ramusculi for the abdominal muscles and skin. Thence from the aorta there rises lower down the cœliac artery, from which originate all the arterial vessels of the abdominal cavity. Because there arises from this the *cysto-hepatic* artery directed towards the gall-bladder and to the liver, where it is dispersed in a multiplicity of branches; the

pancreo-duodeno-gastro-splenic divided into the *pancreo-duodenal* and the gastric, which previous to its being divided upon the stomach sends two pretty large branches to the spleen. Two other small trunks which spring from the cœliac are all directed to the small intestine (*arteriæ mesentericæ superiores*); whilst another branch (*a. mesenterica inferior*) goes off direct from the aorta to disperse itself on the large intestine. Betwixt the cœliac and the last-described artery, the aorta always sends off branches to the testicles and the vasa deferentia in the males, to the ovaries and oviducts in the females; to the adipose bodies; to the kidneys in 10—12 ramusculi. Along the course of the aorta there pass off from it at right angles and in opposite directions the intercostal arteries, and from the last the vesical and the ischiadic, which, having given a superficial branch to the surrounding muscles, and anastomosing with the mammary, turn towards the hinder legs, soon divided into the femoral, tibial and fibular, extending to the fingers, divided into the five digitals. The aorta being prolonged into the tail, first gives small branches to the cloaca, and moreover lateral branches as far as to the extremity of the tail.

B. *Venous System.*—From the union of the digital veins arise the femoral and tibial of the hinder limbs, which are united, in the interior of the pelvis, to the caudal vein, from which then arise the *renal afferent* vein, which receives the vesical and is dispersed through the whole kidney by the aid of considerable lateral branching trunks; the *umbilical*, which runs isolated along the ventral side of the body so as to reach the liver and there lose itself; the *vena portæ*, which ascending successively collects many intestinal branches, the *splenic* vein, the *pancreatic*, the *gastric*, and divides thus enlarged in the liver; whilst the *renal efferent* vein, arising by the side of the kidneys from the many trunks which seem to be anastomosed with the renal efferent veins in the same manner as the pulmonary artery and veins are upon the respiratory sac, turns to the vena portæ *.

* Jacobson was really the first person who made mention of this peculiar circuit of the blood in the kidneys which occurs in fishes and reptiles, but not in birds, as Nicolai has demonstrated (Oken's 'Isis,' 1806, p. 404); but the description given of it by Jacobson was altogether doubtful and confused, so that many anatomists either paid little regard to it, or considered it as a thing not at all demonstrated (Duvernoy in 'Cuvièr, Leçons d'Anat. Comp.' 2nd edit., Paris, 1839, tom. vi. pp. 254, 255). Meyer (Analekten für vergleich. Anat., Bonn, 1835) pointed out traces of it, in the *Rana pipa*, somewhat more distinctly than the Danish anatomist; and Wagner in like manner made it the subject of his investigation (Lehrbuch der vergl. Anat.,